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Gum and Wood Chemicals Manufacturing Point Source Category Effluent Limitations Guidelines; Pretreatment Standards, and New Source Performance Standards

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 454

[FRL 1311-8]

Gum and Wood Chemicals Manufacturing Point Source Category Effluent Limitations Guidelines; Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed Regulation.

SUMMARY: EPA proposes regulations to limit effluent discharges to navigable waters and publicly owned treatment works from facilities engaged in processing sulfate turpentine; tall oil rosin, fatty acids, and pitch; wood rosin, turpentine, and pine oil; and from rosin-based derivatives plants associated with manufacturing facilities in SIC Code 2861. The purpose of this proposal is to provide effluent limitations guidelines for "best available technology" for the Rosin-based Derivatives and Sulfate Turpentine subcategories and to establish "best practicable technology", "best conventional pollutant control technology", and "new source performance standards" for the four subcategories and "pretreatment standards" for the Rosin-based Derivatives and Sulfate Turpentine subcategories, under sections 301, 304, 306, 307, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977). These regulations are also proposed in compliance with the Settlement Agreement in *Natural Resources Defense Council, Inc.* v. *Train,* 8 ERC 2120 (D.O.C. 1976).

The effect of these regulations on the Gum and Wood Chemicals Industry would be to require pretreatment of process wastewaters discharged to publicly owned treatment works (POTWs), and treatment of process wastewaters discharged to waters of the United States. After considering comments received in response to this proposal, EPA will promulgate a final rule.

This notice also contains information on three additional subcategories: Char and Charcoal Briquets; Gum Rosin and Turpentine; and Essential Oils. By virtue of either the effect of existing regulations or current industry practices, the majority of plants in these subcategories are achieving no discharge of process wastewater. Therefore, the Agency concludes that no further guidelines or standards are necessary for these subcategories.

The Supplementary Information section of this preamble describes the legal authority and background, the technical and economic bases, and other aspects of the proposed regulations. That section also summarizes comments on a draft technical document circulated on January 19, 1979, and solicits comments on specific areas of interest. The abbreviations, acronyms, and other terms used in the Supplementary Information section are defined in Appendix A to this notice.

These proposed regulations are supported by three major documents available from EPA. Analytical methods are discussed in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants.* EPA's technical conclusions are detailed in the *Development Document for Proposed Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Gum and Wood Chemicals Industry Point Source Category.*

The Agency's economic analysis is found in *Economic Impact Analysis of Proposed Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Gum and Wood Chemicals Point Source Category.*

DATES: Comments on this proposal must be submitted by January 28, 1980.

ADDRESS: Send comments to: Mr. William Thomson II, P.E., Effluent Guidelines Division, Environmental Protection Agency, 401 M Street, Southwest, Washington, D.C. 20460. Attention: EGD Docket Clerk, Gum and Wood (WH-552). The supporting information and all comments on this proposal will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2404 (Rear) PM-213 (EPA Library). The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Technical information and copies of technical documents may be obtained from Mr. William Tomson II, P.E., at the address listed above or call (202) 426-2554. The economic analysis may be obtained from Ms. L. Jean Noroian, Economic Analysis Staff (WH-586), Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, (202) 426-2617.

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I. Legal Authority

The regulations described in this notice are proposed under authority of sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 92-517). These regulations are also proposed in compliance with the Settlement Agreement in *Natural Resources Defense Council, Inc.* v *Train,* 8 ERC 2120 (D.D.C. 1976), modified March 9, 1979.

II. Background

A. The Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 established a comprehensive program to "restore and maintain the chemical, physical, and

biological integrity of the Nation's waters" section 101(a). By July 1, 1977, existing industrial dischargers were required to achieve "effluent limitations requiring the application of the best practicable control technology currently available" ("BPT"), section 301(b)(1)(A); and achieve "effluent limitations requiring the application of the best available technology economically achievable * * * which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants" ("BAT"), section 301(b)(2)(A). New industrial direct dischargers were required to comply with section 306 new source performance standards ("NSPS"), based on best available demonstrated technology; and new ("PSNS") and existing ("PSES") dischargers to publicly owned treatment works ("POTWs") were subject to pretreatment standards under sections 307(b) and (c) of the Act. While the requirements for direct dischargers were to be incorporated into National Pollutant Discharge Elimination System (NPDES) permits issued under section 402 of the Act, pretreatment standards were made enforceable directly against dischargers to POTWs (indirect dischargers).

Although section 402(a)(1) of the 1972 Act authorized the setting of requirements for direct dischargers on a case-by-case basis, Congress intended that, for the most part, control requirements would be based on regulations promulgated by the Administrator of EPA. Section 304(b) of the Act required the Administrator to promulgate regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of BPT and BAT. Moreover, sections 304(c) and 306 of the Act required promulgation of regulations for NSPS, and sections 304(f), 307(b), and 307(c) required promulgation of regulations for pretreatment standards. In addition to these regulations for designated industry categories, section 307(a) of the Act required the Administrator to promulgate effluent standards applicable to all dischargers of toxic pollutants. Finally, section 501(a) of the Act authorized the Administrator to prescribe any additional regulations "necessary to carry out his functions" under the Act.

The EPA was unable to promulgate many of the these regulations by the dates contained in the Act. In 1976, EPA was sued by several environmental groups, and in settlement of this lawsuit EPA and the plaintiffs executed a "Settlement Agreement" which was approved by the Court. This Agreement required EPA to develop a program and adhere to a schedule for promulgating for 21 major industries BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 65 "priority" pollutants and classes of pollutants. See *Natural Resources Defence Council, Inc.* v. *Train,* 8 ERC 2120 (D.D.C. 1976), modified March 9, 1979.

On December 27, 1977, the President signed into law the Clean Water Act of 1977. Although this law makes several important changes in the Federal water pollution control program, its most significant feature is its incorporation into the Act of several of the basic elements of the Settlement Agreement program for toxic pollution control. Sections 301(b)(2)(A) and 301(b)(2)(C) of the Act now require the achievement by July 1, 1984, of effluent limitations requiring application of BAT for "toxic" pollutants, including the 65 "priority" pollutants and classes of pollutants which Congress declared "toxic" under section 307(a) of the Act. Likewise, EPA's programs for new source performance standards and pretreatment standards are now aimed principally at toxic pollutant controls. Moreover, to strengthen the toxics control program, Congress added section 304(e) to the Act, authorizing the Administrator to prescribe "best management practices" ("BMPs") to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing or treatment process.

In keeping with its emphasis on toxic pollutants, the Clean Water Act of 1977 also revised the control program for non-toxic pollutants. Instead of BAT for "conventional" pollutants identified under section 304(a)(4) (including biochemical oxygen demand, suspended solids, fecal coliform, and pH), the new section 301(b)(2)(E) requires achievement by July 1, 1984, of "effluent limitations requiring the application of the best conventional pollutant control technology" ("BCT"). The factors considered in assessing BCT for an industry include the costs and benefits of attaining a reduction in effluents, compared to the costs and effluent reduction benefits from the discharge of publicly owned treatment works (section 304(b)(4)(B)). For non-toxic, nonconventional pollutants, sections 301 (b)(2)(A) and (b)(2)(F) require achievement of BAT effluent limitations within three years after their establishment or July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of these proposed regulations is to provide effluent limitations guidelines for BAT and pretreatment standards in the existing sources (PSES) for Sulfate Turpentine and Rosin-based Derivatives subcategories, and to establish BPT, BCT, and NSPS in the Wood Rosin, Turpentine, and Pine Oil; Tall Oil Rosin, Fatty Acids, and Pitch; Sulfate Turpentine; and Rosin-based Derivatives subcategories under sections 301, 304, 306, 307, and 501 of the Clean Water Act.

B. Prior EPA Regulations

EPA promulgated Interim Final BPT and proposed BAT, NSPS, and PSNS for the Char and Charcoal Briquets; Gum Rosin and Turpentine; Wood Rosin, Turpentine and Pine Oil; Tall Oil Rosin, Fatty Acids, and Pitch; Essential Oils; and Rosin-Based Derivatives subcategories of the Gum and Wood Chemicals Manufacturing Point Source Category on May 18, 1976 (Part 41 FR 20506).

The regulations proposed in this notice include new BAT, BCT, NSPS, PSES, and PSNS regulations for the Rosin-based Derivatives subcategory. BCT and NSPS regulations are proposed for the Wood Rosin and Tall Oil subcategories. BPT, BAT, BCT, NSPS, PSES, and PSNS regulations are proposed for a new subcategory, Sulfate Turpentine.

C. Overview of the Industry

The Char and Charcoal Briquets (Segment A); Gum Rosin and Turpentine (Segment B); Wood Rosin, Turpentine, and Pine Oil (Segment C); Tall Oil Rosin, Fatty Acids, and Pitch (Segment D); and Essential Oils (Segment E) subcategories are included within the U.S. Department of Commerce, Bureau of the Census Standard Industrial Classification (SIC) 2861. Facilities for manufacturing rosin-based derivatives (Segment F) are included in SIC 2821; this study covers only those rosin-based derivatives manufacturing plants located within and operated in conjunction with Gum and Wood Chemicals plants (SIC 2861). Sulfate turpentine manufacturing (Segment G) has not been included in the Standard Industrial Classification system. However, since sulfate turpentine, like tall oil, is a by-product of the Kraft pulping process in the pulp and paper industry and is refined and further processed primarily by facilities with other SIC 2861 manufacturing processes, EPA has included it as a part of this study.

The Gum and Wood Chemicals Industry originated in the Naval Stores industry. North American colonists harvested pine oleoresin for use in construction of naval vessels and the industry has grown and expanded since then as new uses for pine products have arisen. One of the more significant innovations has been development of the use of by-products from the Kraft paper process—tall oil and sulfate turpentine—as raw materials for the Gum and Wood Chemicals Industry.

Char results from the destructive distillation of softwood and hardwood and may be further processed into charcoal or activated carbon.

Gum rosin and turpentine are produced from the sap of live pines, which is distilled to separate the turpentine and gum rosin.

Wood rosin, turpentine, and pine oil are produced by solvent extraction from pine chips. After recovery of the solvent, distillation separates turpenes, rosin, pine oil, and residual pitch.

Crude tall oil, derived from the Kraft pulping process, is acidulated (treated with dilute sulfuric acid) and then distilled to separate pitch, rosin acids, and fatty acids.

Essential oils are produced by steaming the oil containing raw material under pressure. The resulting oil/water mixture is allowed to separate and the finished oil product is sold.

Rosin derivatives processing is usually a batch modification of rosins. Process operating conditions in the reaction kettle depend on product specifications, raw materials, and other variables.

Sulfate turpentine is condensed from relief gas from the digester of the Kraft pulping process. Distillation separates the turpentine into its components: alpha-pinene, beta-pinene, dipentene, sulfated pine oil, limonene, camphene, and anethol.

EPA has identified 114 plants in the Gum and Wood Chemicals Industry in the United States, primarily located in the South, Mid-Atlantic, and Midwest states. Plant age, number of employees, and wastewater volume vary from subcategory to subcategory. Char and Charcoal Briquets, Gum Rosin, and Essential Oils (91 plants) all have processing techniques that have not changed for years. These plants also have the lowest flows ranging from zero in Char and Charcoal Briquets to one plant in Essential Oils with an average flow of 5,000 gallons per day. Sulfate Turpentine and Tall Oil are two of the newest processing technologies in the industry with most units being less than 30 years old. Rosin-Based Derivatives processing is a continually changing segment of the industry.

While the industry historically is characterized by small independent companies processing wood stumps or gum exudate from pine trees, considerable consolidation has taken place over the past 15 years such that all but two of the plants in the four subcategories covered by these proposed regulations are operated by multi-industry corporations (14 plants) or pulp and paper companies (7 plants). Of the eight major corporations operating plants in the four subcategories the largest accounts for 42% of sales, the two largest account for 65% of sales and the four largest account for 83% of sales.

During the past 10 years, the industry has maintained a modest but cyclical rate of sales growth that has averaged about 3–4% annually. However, most of the growth has been due to price increases and a general trend of upgrading the value of products produced. Real growth in production volume has declined slightly. Tall oil production alone has increased measurably over this period. In addition to supporting the low growth in sales, the industry ranks fairly low with regard to profitability. The industry's annual return on sales is around 4–5% which is 1–2% below the average for all chemicals and allied products. The major reason for the low levels of profitability has been the intense competition from higher performance material based on petroleum products which have kept prices well below desirable levels. The trend to production of upgraded, higher value products has helped alleviate some of this competition and has resulted in some profitability improvement. Currently, however, the Agency is aware of plants for only one new plant (in the tall oil subcategory) in the four subcategories covered by these proposed regulations.

Capital expenditures have typically been small and over the period 1972 through 1976 have averaged less than 3% of sales. It is expected, however, that future trends toward product upgrading will require significantly increased capital expenditures. Since depreciation is a very small percent of sales (estimated as less than 5%), funds for these investments will likely not be generated entirely from operations.

Water is essential to the Gum and Wood Chemicals Industry and is used invirturally all processes except those for char and charcoal briquets. Water cleans out the tank cars which transport the raw material. It is used in gum rosin, wood rosin, tall oil, and sulfate turpentine in barometric condensers which generate the vacuum in the distillation columns. Water steams the oil out of the raw material for essential oils. Chemical reactions in rosin derivatives generate water and water cleans the reaction kettles. The wastewater from all these operations contains high levels of oils, biodegradable organic matter, and toxic pollutants.

The most important pollutants or pollutant paramenters are: (1) Toxic pollutants (benzene, toluene, ethylbenzene, phenol, methylene chloide, copper, chromium, nickel, and zinc); (2) conventional pollutants (BOD5, TSS, Oil and Grease, and pH); and (3) non-conventional pollutants (COD).

III. Scope of this rulemaking and summary of methodology

These proposed regulations open a new chapter in water pollution control requirements for the Gum and Wood Chemicals Industry. EPA's 1973–1976 round of rulemakings emphasized the achievement of best practicable technology (BPT) by July 1, 1977. In general, this technology level represents the average of the best performances a of well known technologies for control of familiar (i.e., "classical") pollutants.

This round of rulemaking, in contrast, aims for the achievement by July 1, 1984, of the best available technology economically achievable (BAT), which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. At a minimum, this technology level represents the very best economically achievable performance in any industrial category or subcategory. Moreover, as a result of the Clean Water Act of 1977, the emphasis of EPA's program has shifted from control of "classical" pollutants to control of toxic substances.

In its 1977 legislation, Congress recognized that it was dealing with areas of scientific uncertainty when it declared the 65 "priority" pollutants and classes of pollutants "toxic" under section 307(a) of the Act. The "priority" pollutants have been relatively unknown outside of the scientific community, and those engaged in wastewater sampling and contol have had little experience dealing with them. Additionally, these pollutants often appear and have toxic effects at concentrations which severely tax current analytical techniques. Though Congress was aware of the state-of-the-art difficulties and expense of "toxics" control and detection, it nevertheless directed EPA to act quickly and decisively to detect, measure, and regulate these substances.

EPA's implementation of the Act required a complex development program. Initially, because in many cases no public or private agency had done so, EPA and its laboratories and consultants had to develop analytical methods for toxic pollutant detection and measurement, which are discussed under Sampling and Analytical Program. EPA then gathered technical and financial data about the industry, which are summarized under Data Gathering Efforts. The Agency developed these proposed regulations on the basis of its information.

EPA first studied the Gum and Wood Chemicals Industry to determine whether differences in raw materials, final products, manfacturing processes, equipment, age and size of plants, water usage, wastewater constituents, or other factors required the development of separate effluent limitations and standards for different segments of the industry. This study included the identification of the raw waste and treated effluent characteristics, including the sources and volume of water used, the processes employed, and the sources of pollutants and wastewaters in the plant.

Next, EPA identified several distinct control and treatment technologies, both in-plant and end-of-process, which are either in use or capable of use in the Gum and Wood Chemicals Industry.

The Agency compiled and analyzed both historical and newly generated data on the effluent quality resulting from the application of these technologies. The long-term performance, operational limitations, and reliability of each of the treatment and control technologies were also indentified. In addition, EPA considered the non-water quality environmental impacts of these technologies, including impacts on air quality, solid waste generation, water scarcity, and energy requirements.

EPA derived unit process costs from model plant characteristics (production and flow) applied to each treatment process unit cost curve (i.e., pH adjustment, activated sludge, metals precipitation by pH adjustment, activated carbon columns, etc). These unit process costs were estimated at each treatment level for ease of analysis. Total costs at each treatment level were then calculated by adding the unit costs at that level to the cost of previous levels. After confirming the reasonableness of this methodology, the Agency evaluated the economic impacts of these costs. (Cost and economic impacts are discussed in detail under the various technology options, and in the section of this notice entitled Costs, Effluent Reduction Benefits, and Economic Impacts).

Upon consideration of these factors, as more fully described below, EPA identified various control and treatment technologies as BPT, BCT, BAT, PSES, PSNS, and NSPS. The proposed regulations, however, do not require the installation of any particular technology. Rather, they require achievement of effluent limitations representative of the proper operation of these technologies or equivalent technologies.

IV. Data Gathering Efforts

Section III of the Development Document describes in detail the data gathering program.

EPA derived the mailing list for the data gathering effort from previous plant listings in the BPT administrative record: the 1977 Dun and Bradstreet listings; Standard and Poor listings; the Stanford Research Institute Directory of Chemical Producers; and the available State Chamber of Commerce's Directory of Manufacturing. Detailed questionnaires were then mailed to 338 addressees in the seven subcategories. Of this total, 224, plants indicated no gum and wood chemicals processing at the location. For the 114 potential plants, 72 returned questionnaires. Followup telephone contact confirmed an additional 10 processors in the seven subcategories of interest. Thirty-two charcoal plants remain unconfirmed.

Distribution of the eighty-two plants by subcategory is as follows: Forty-five process char and charcoal briquets; nine process essential oils; seven process gum rosin and turpentine; four process wood rosin, turpentine, and pine oil; twelve process tall oil rosin, fatty acids, and pitch; thirteen process rosin-based derivatives; and seven process sulfate turpentine. Thirteen plants have processes in more than one subcategory.

In addition to the above data sources, EPA also consulted the Pulp Chemicals Association (PCA), obtained NPDES permit files in EPA regional offices, obtained engineering studies on treatment systems for several gum and wood chemicals plants, made contacts with state pollution control offices, and obtained a report from a demonstration project sponsored by the EPA Office of Research and Development.

Data for the economic analysis of the industry were obtained from the Development Document and from technical 308 surveys, government publications, industry association sources, publicly available financial reports and industry reports, and personal interviews with representatives of three companies whose plants manufacture gum and wood chemicals.

V. Sampling and Analytical Program

As Congress recognized in enacting the Clean Water Act of 1977, the state-of-the-art ability to monitor and detect toxic pollutants is limited. Most of the toxic pollutants were relatively unknown until only a few years ago, and only on rare occasions has EPA regulated or has industry monitored or even developed methods to monitor for these pollutants. As a result, analytical methods for many toxic pollutants under section 304(h) of the Act have not yet been promulgated.

As the state-of-the-art has matured, EPA has refined the sampling and analytical protocols, and intends to continue this refinement to keep pace with technology advancements. Resource constraints, however, prevent EPA from reworking completed sampling and analyses to keep up with the evolution of analytical methods. As a result, the analytical techniques used in some rulemakings may differ slightly from those used in other rulemaking efforts. In each case, however, the analytical methods used represent the best state-of-the-art available for a given industry study. One of the goals of EPA's analytical program is the promulgation of additional section 304(h) analytical methods for toxic pollutants, scheduled to be completed within calendar year 1979.

EPA ascertained the presence or absence and magnitude of the 129 specific toxic pollutants in gum and wood chemicals wastewaters in a two-phase (screening and verification) sampling and analysis program involving ten facilities. The plants were selected primarily to be representative of the manufacturing processes, the prevalent mix of production among plants, and the current treatment technology in the industry.

The sampling and analysis program was conducted during April and May of 1978. Five plants were sampled that represented six of the seven major Gum and Wood Chemicals processes (the seventh process, Char and Charcoal Briquets, is dry). A single 24-hour composite sample was obtained from the raw and treated wastewater streams at each plant for screening analysis and analyzed for the 129 toxic pollutants. Sampling and analyses were conducted according to *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, U.S. EPA, Cincinnati, March 1977 (revised April 1977), and *Analytical Methods for the Verification Phase of the BAT*

Review, U.S. EPA Effluent Guidelines Division, Washington, D.C., June 1977.

The screening sampling and analysis program determined which toxic pollutants were present in wastewaters from each industrial segment sampled, and the order of magnitude of the contamination.

EPA evaluated the results of the screening analyses along with the process engineering review for each subcategory. The toxic pollutants found to be present or suspected present due to their use as raw materials, by-products, final products, etc., were selected for verification. As a result of screening analysis, the following pollutants were not analyzed for during verification because they were not detected during screening analysis: PCB's, pesticides, cyanide, antimony, beryllium, selenium, silver, and thallium. During the screening sampling visits to four of the five selected plants, two additional 24-hour samples were collected and analyzed for the second phase of the program.

The verification sampling and analysis program, conducted over a three-month period, was intended to obtain as much quantitative data as possible for each subcategory on the 98 toxic pollutants that were identified during the screening phase. The plants selected for sampling represented the full range of inplace process and wastewater treatment technology for each subcategory. Nine plants were sampled for verification analysis.

The primary objective of the field sampling program was to collect samples of wastewater from which the concentrations of toxic pollutants could be ascertained if present. Verification sampling visits to the plants were made during three consecutive days of plant operation. Verification sampling at four of these plants was done in conjunction with screening sampling. Raw wastewater samples were taken either before treatment or after oil skimming depending upon accessibility to the wastewater stream. Treated effluent samples were taken either following pretreatment (usually indirect dischargers) or biological treatment (direct dischargers) where these technologies were in place. EPA also collected one sample of intake water to determine the presence of toxic pollutants prior to contamination by Gum and Wood Chemicals processes.

At raw waste, final discharge, and some intermediate sample points, automatic samplers took samples at timed intervals. Samples for conventional, non-toxic nonconventional and some toxic pollutants were obtained from the 24-hour composite. Grab samples were taken in specially prepared vials for volatile (purgeable) toxic organics and cyanide.

Toxic pollutants were analyzed according to groups of chemicals and associated analytical schemes. Organic toxic pollutants included volatile (purgeable), base-neutral, and acid (extractable) pollutants, and pesticides. Inorganic toxic pollutants included heavy metals and cyanide.

The primary screening and verification method for the volatiles, base-neutral, and acid organics was gas chromatography with confirmation and quantification on all samples by mass spectrometry (GC/MS). Total phenols were analyzed by the 4–AAP method. Analysis of pesticides employed GC with electron capture detection. The Agency analyzed the toxic heavy metals by atomic absorption spectrometry (AAS), with flame or graphite furnace atomization following appropriate digestion of the sample. Cyanides were determined through the colorimetric method of distillation and analysis. Analyses for conventional pollutants (BOD5, TSS, Oil and Grease, and pH) and non-conventionals (COD) were accomplished using "Methods for Chemical Analysis of Water and Wastes," (EPA 625/6–74–003) and amendments.

Although EPA believes that the available data support these regulations, the Agency would have preferred a larger data base for some of the toxic pollutants and will continue to seek additional data. EPA will periodically review these regulations, as required by the Act, and make any revisions supported by new data. In developing these regulations, moreover, EPA has taken a number of steps to deal with the limits of science and available data. (See Regulated Pollutants).

VI. Industry Subcategorization

Subcategorization of the Gum and Wood Chemicals industry was first accomplished during the development of the original BPT guidelines. These subcategories were published in the **Federal Register**, May 18, 1976 (41 FR 20506). For the present study, the previous subcategorization was re-evaluated. This evaluation included a determination of whether differences in raw material used, product produced, manufacturing process employed, equipment, age, size, wastewater constituents, and other factors require development of different subcategorization of the industry. A review of the subcategories from the BPT study indicated that no further subcategorization of these segments of the industry was warranted. However, the processing of sulfate turpentine involves a completely different raw material and results in different products with some differences in manufacturing processes. In addition, the wastewater constituents appear to be significantly different from wastewaters produced in the other subcategories. As a result, it was determined that a new industry segment, sulfate turpentine, should be added. With the addition of the sulfate turpentine subcategory, the BPT subcategorization is satisfactory. Section IV of the Development Document contains a detailed description of the factors considered and the rationale for subcategorization.

The subcategories of the Gum and Wood Chemicals industry are defined as follows:

Subcategory, Product, and Raw Material Source

A—Char and Charcoal Briquets, Hardwood and softwood scraps
B—Gum Rosin and Turpentine, Crude "gum" oleresin from the sapwood of living trees
C—Wood Rosin, Turpentine, and Pine Oil, Wood stumps and other resinous woods from cut over forest
D—Tall Oil Rosin, Pitch, and Fatty Acids, By-product crude tall oil from the Kraft process
E—Essential Oils, Scrap wood fines, twigs, barks, or roots of select woods or plants
F—Rosin Derivatives, Rosin products from gum, wood, and tall oil chemicals
G—Sulfate Turpentine, Low boiling vapors condensed from the Kraft pulping of pine wood

VII. Available Wastewater Control and Treatment Technology

A. Status of In-Place Technology

Current treatment practices in the Gum and Wood Chemicals Industry range from oil/water separation by all plants to biological treatment by most direct dischargers. Most indirect dischargers and dischargers to combined industrial treatment systems have only oil/water separation and equalization, although one indirect discharger has extensive pretreatment in place. There are 12 direct dischargers (four comingle with industrial treatment systems which discharge directly). The four dischargers to combined treatment have oil/water separation and settling. Six direct dischargers have aerated lagoon biological treatment. One direct discharger utilizes an activated sludge biological treatment system. One direct discharger uses activated carbon in lieu of biological treatment. There are six dischargers to POTWs and two dischargers who comingle their wastes

with other industrial wastewaters prior to discharge to a POTW.

B. Control Technologies Considered

The control and treatment technologies used in arriving at the previously promulgated BPT effluent limitations for tall oil rosin, fatty acids, and pitch; wood rosin, turpentine, and pine oil; and rosin-based derivatives were: (1) In-plant control—wastewater reduction through decreasing and recycling process water, segregating waste streams, and oil/water separation; (2) equalization; (3) dissolved air flotation for the wood rosin and tall oil subcategories only; (4) biological treatment by activated sludge; and (5) flocculation and clarification. These same treatment technologies, except for dissolved air flotation, were used as the candidate BPT treatment levels for the sulfate turpentine subcategory presented in this proposal. Additional control and treatment technologies available for this industry include: (1) Metals precipitation and (2) granular activated carbon columns. In considering these additional control and treatment technologies, the four existing plants who comingle their wastes with other industrial wastewaters prior to treatment and discharge to waters of the United States are considered as indirect dischargers.

In-plant control, preliminary treatment, and biological treatment technologies have been demonstrated within the Gum and Wood Chemicals Industry. Metals precipitation is currently in use at one sulfate turpentine facility where the plant has isolated a wastewater source and is treating only that stream. A granular activated carbon column unit is in use at one plant in lieu of biological treatment. Performance data of activated carbon columns following biological treatment of gum and wood chemicals wastewater are not available.

VIII. BPT Effluent Limitations—Sulfate Turpentine

The factors considered in defining best practicable control technology currently available (BPT) include the total cost of application of technology in relation to the effluent reduction benefits achieved from such application; the age of equipment and facilities involved; the process employed; non-water quality environmental impacts (including energy requirements); and other factors considered appropriate by the Administrator. In general, the BPT technology level represents the average of the best performances of plants of various ages, sizes, processes, or other common characteristics. Where existing performance is uniformly inadequate, the Agency may transfer BPT from a different subcategory or category. Limitations based on transfer technology must be supported by a conclusion that the technology is indeed transferable, and by a reasonable prediction that it can achieve the prescribed effluent limits. BPT focuses on end-of-pipe treatment rather than process changes or internal controls, except where such are common industry practice.

The cost/benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, which does not require the Agency to quantify benefits in monetary terms. See e.g., *American Iron and Steel Institute* v. *EPA*, 526 F.2d 1027 (3rd Cir. 1975). In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of existing discharges, the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the cost and economic impacts of the required pollution control level. The Act does not permit consideration of water quality problems attributable to particular sources or water quality improvements in particular water bodies. See *Weyerhaeuser Company* v. *Costle*, 11 ERC 2149 (D.C. Cir. 1978).

The Agency has concluded that BPT effluent limitations guidelines should be developed for sulfate turpentine producing plants because the two direct dischargers in this subcategory are located at facilities which also produce other gum and wood chemicals products. Development of numerical guidelines for BPT for this subcategory would provide the NPDES authorities the information necessary for application of BPT at these two plants. The BPT technology selected includes oil/water separation, equalization, neutralization, nutrient addition, biological treatment, and final settling. Application of this technology will result in the removal of 70 and 80.3 additional pounds per day of BOD5 and TSS respectively from the direct discharging sulfate turpentine plants.

Economic analysis indicates that compliance with this option would require one of the two direct discharge plants producing sulfate turpentine to invest a total of $104.5 thousand and incur annualized costs (including operation and maintenance, interest, and depreciation) of $183 thousand. These costs are projected to effect minimal price increases. The Agency projects that selection of this option will not result in any plant closures or unemployment.

IX. BCT Effluent Limitations

The 1977 amendments added section 301(b)(4)(E) to the Act, establishing "best conventional pollutant control technology" (BCT) for discharges of conventional pollutants from existing industrial point sources. Conventional pollutants are those defined in section 304(b)(4)—BOD, TSS, fecal coliform, and pH—and any additional pollutants defined by the Administrator as "conventional." On July 30, 1979, EPA added oil and grease to the conventional pollutant list (44 FR 44501).

BCT is not an additional limitation, but replaces BAT for the control of conventional pollutants. BCT requires that limitations for conventional pollutants be assessed in light of a new "cost-reasonableness" test, which involves a comparison of the cost and level of reduction of conventional pollutants from the discharge of publicly owned treatment works to the cost and level of such pollutants from a class or category of industrial sources. As part of its review of BAT for certain "secondary" industries, the Agency has promulgated a methodology for this cost test. See 44 FR 50732 (August 26, 1979).

EPA identified no treatment technologies beyond BPT for control of the conventional pollutants. Therefore, the proposed BCT regulations are equal to BPT.

X. BAT Effluent Limitations

The factors considered in assessing best available technology economically achievable (BAT) include the age of equipment and facilities involved, the process employed, process changes, non-water quality environmental impacts (including energy requirements), and the costs of application of such technology (section 304(b)(2)B)). At a minimum, the BAT technology level represents the best existing economically achievable performance of plants of various ages, sizes, processes or other shared characteristics. As with BPT, where existing performance is uniformly inadequate, the Agency may transfer BAT from a different subcategory or category. BAT may include process changes or internal controls, even when not common industry practice.

The statutory assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (see *Weyerhaeuser* v. *Costle, supra*). In developing the proposed BAT, however, EPA has given substantial weight to the reasonableness of costs. The Agency has considered the volume and nature of discharges, the volume and nature of discharges

expected after application of BAT, the general environmental effects of the pollutants, and the costs and economic impacts of the required pollution control levels.

Despite this expanded consideration of costs, the primary determinant of BAT is effluent reduction capability. As a result of the Clean Water Act of 1977, the achievement of BAT has become the principal national means of controlling toxic water pollution.

Seventeen toxic pollutants were found at levels above the detection limits in the analyses of discharges from the Gum and Wood Chemicals Industry. EPA has selected from four available options a BAT technology which will reduce this toxic pollution by a significant amount.

These options (which are described in greater detail in Section VII of the Development Document) are:

(A) Option One—Determine that effluent limitations based upon BPT technology (oil/water separation, equalization, air flotation, and biological treatment) reflect the technology which should be imposed under BAT.

No costs or economic impacts beyond that of BPT will result from selection of this option.

(B) Option Two—Require effluent limitations based upon BAT Option One plus metals removal at-the-source (at a reaction kettle or other designated site where intermediates are modified by use of a metallic catalyst) for those plants using metals in their processes. This option incorporates at-the-source metals removal by pH adjustment as described in Section VII of the Development Document.

Application of metals removal at-the-source ensures a high degree of metallic pollutants removal. One sample collected at a sulfate turpentine plant using this technology showed 155 mg/l copper in the raw waste to the metals removal unit and 1 mg/l after treatment. EPA estimates that application at-the-source (in-plant) will result in the removal of 44 pounds per day of zinc (96 percent) from three direct discharging plants which modify rosins by use of zinc as a catalyst. Since the data indicate that application of biological treatment as exemplified by activated sludge or aerated lagoons results in significant reductions of the organic toxic pollutants of concern, this option will result in effective control of all toxic pollutants shown to be present in substantial quantities in the raw wastewater generated by this industry.

Economic analysis indicates that compliance with this option would require 3 of the 8 direct dischargers to invest a total of $225.6 thousand and incur annualized costs of $512 thousand. Costs of up to 5 percent of sales may be passed on through price increases. The Agency projects that selection of this option will not result in any plant closures or unemployment.

(C) Option Three—Require effluent limitations based upon BAT Option One plus metals removal at the end-of-pipe for those plants using metals in their processes or deriving them from process steps. This option incorporates end-of-pipe metals removal by pH adjustment as described in Section VII of the Development Document. However, because the metal source waste stream is diluted by other wastewater sources, this option would not result in the highest possible removal efficiency and would require significantly higher capital and operating expenses because of the high volumes of wastewater that would require treatment.

EPA estimates that application of metals removal at the end-of-pipe would result in the removal of 31.5 pounds per day of zinc (76.5 percent removal) from the three direct discharge plants using zinc as a catalyst.

Economic analysis indicates that compliance with this option would require 3 of the 8 direct discharges to invest a total of $561 thousand and incur annualized cost of $1.93 million. Costs of up to 5 percent of sales may be passed on through price increases. The Agency projects that selection of this option may result in one plant closure and loss of less than one percent of industry employment.

(D) Option Four—Require effluent limitations based upon BAT Option Two plus the end-of-pipe addition of granular activated carbon (GAC) columns to control residual toxic organic pollutants remaining after biological treatment.

This option would ensure an advanced degree of toxic pollutant removal, including residues of dissolved high molecular weight organic compounds to estimated concentrations of less than 50 parts per billion (ppb). However, the most prevalent toxic organic pollutants found in this industry (phenol, toluene, benzene, and ethylbenzene) usually are much lower in the effluent from BPT treatment facilities than in the raw waste load to these treatment facilities. The highest value from a biological treatment system for organic toxics was 200 ppb benzene. The Agency projects that application of GAC after biological treatment would result in the removal of 2.1 pounds per day of toxic organic pollutants from the eight direct discharging plants.

Economic analysis indicates that compliance with this option would require 7 of the 8 direct dischargers to invest a total of $15.7 million and incur annualized cost of $7.1 million. The costs may range 2.3 to 40.2 percent of sales. Costs up to 5 percent of sales may be passed on through price increases. The Agency projects that selection of this option may result in eight plant closures and a loss of 29 percent of industry employment.

(E) BAT Selection and Decision Criteria—EPA has selected Option Two as the basis for proposed BAT effluent limitations. This option was selected because it assures, through the continued application of biological treatment, adequate removals of the organic toxic pollutants of concern and, in addition, provides significant removal of the toxic pollutants which continue to be of concern in this industry (copper, nickel, and zinc) after application of BPT.

At-the-source limitations based on concentration rather than mass limitations was chosen because modification of the rosins and turpenes is a batch process with production dependent upon demand; dilution of the metal bearing waste stream prior to final discharge causing the final concentration to approach the detection limit; most plants would treat in-plant because of less expensive treatment; and varying dilutions between plants would require varying levels of treatment if the concentration limitations were applied at the end-of-pipe.

Although not required by the Act, a balancing of costs of the technology options weighed heavily in this decision (see Section IX of the Development Document for detailed discussion).

The Agency rejected Option Three because of the higher cost in comparison to the lower expected removals of toxic metallic pollutants. The Agency also rejected Option Four because of the high cost of activated carbon columns in comparison to the expected additional removals of toxic organic pollutants.

Because of the limited data base for metals removal in this industry, the Agency compared the results obtained by metals removal technology used in other industrial categories currently under study. While the technology is being used in some of the other categories to treat for the metals of interest here (i.e., Ferric Chloride Production Subcategory in the Inorganic Chemicals Point Source Category), most were rejected because the wastewaters were not characteristic of the type of wastewaters generated in the Gum and Wood industry. The Agency chose to use the numerical limitations from the Electroplating Category because many of the problems associated with treatment in this category (i.e., chelating

agents and the presence of oils) more closely resembled the wastewater characteristics from gum and wood chemicals processing.

XI. New Source Performance Standards

The basis for new source performance standards (NSPS) under section 306 of the Act is the best available demonstrated technology. New plants have the opportunity to design the best and most efficient gum and wood chemicals manufacturing processes and wastewater treatment technologies, and, therefore, Congress directed EPA to consider the best demonstrated process changes, in-plant controls, and end-of-pipe treatment technologies which reduce pollution to the maximum extent feasible. EPA considered the four options previously described in the Section X BAT Effluent Limitations for selection of NSPS technology.

NSPS Selection and Decision Criteria—EPA has selected Option Two as described in Section X as the basis for proposed new source performance standards because it provides acceptable control of conventional pollutants and the maximum feasible removal of toxic pollutants of concern. The Agency rejected Option One because that treatment scheme does not address the removal of toxic metal pollutants. Option Three was rejected because of the lower removal rate and higher cost in comparison to Option Two. Option Four would change the rate of entry into this industry and would slow the rate of industry growth.

XII. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES), which must be achieved within three years of promulgation. PSES are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of POTWs. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based, analagous to the best available technology for removal of toxic pollutants.

(A) Option One—Do not regulate. The data base indicates that levels of organic toxic pollutants expected to be discharged range from below the detection limit to 19 mg/l. These levels of organic toxic pollutants can be readily removed in a POTW without incompatibility or pass-through. However, two subcategories, Sulfate Turpentine and Rosin-based Derivatives, use processes which involve metals as catalysts. These metals are present in the wastewater from some plants which discharge to POTW's. Conventional POTW treatment would fail to remove the metals.

No costs or economic impacts will result from selection of this option.

(B) Option Two—

(a) Do not require specific pretreatment standards for the two subcategories (Wood Rosin and Tall Oil) that discharge only conventional pollutants and organic toxic pollutants. As noted above, the data available indicate that the conventional pollutants and organic toxic pollutants discharged by these subcategories can be removed in a POTW without incompatibility or passthrough.

(b) Require specific pretreatment standards for those subcategories (Sulfate Turpentine and Rosin-based Derivatives) that generate metallic bearing wastewater. Application of metals removal at-the-source of the pollutants can remove substantial quantities of the metals generated by these subcategories. EPA estimates that application of metals removal at-the-source would result in the removal of 11.1 pounds per day of copper (73.5 percent) and 2.0 pounds per day of nickel (39 percent) from two sulfate turpentine plants (one plant has technology in-place) and 136.2 pounds per day of zinc (96 percent) from three rosin-based derivatives plants.

Economic analysis indicates that compliance with this option would require 4 of the 12 indirect dischargers to invest a total of $258 thousand and incur annualized costs of $521 thousand. These costs may effect minimal price increases. The Agency projects that selection of this option will not result in any plant closure or unemployment.

(C) Option Three—

(a) Do not require specific pretreatment standards for the two subcategories (Wood Rosin and Tall Oil) that discharge only conventional pollutants and organic toxic pollutants.

(b) Require specific pretreatment standards for those subcategories (Sulfate Turpentine and Rosin-based derivatives) that generate metallic bearing wastewater. Application of metals removal at the end-of-pipe can remove some of the metals generated by these subcategories. EPA estimates that application of metals removal at the end-of-pipe would result in the removal of 7.6 pounds per day of copper (72.5 percent) and no nickel from two sulfate turpentine plants and 38.7 pounds per day of copper (72.5 percent) and no nickel from two sulfate turpentine plants and 38.7 pounds per day of zinc (94.5 percent) from three rosin-based derivatives plants.

Economic analysis indicates that compliance with this option would require four of the twelve indirect dischargers to invest a total of $368 thousand and incur annualized costs of $958.6 thousand. These costs may effect minimal price increases. The Agency projects that selection of this option will not result in any plant closures or unemployment.

(D) Selection of Pretreatment Technology and Decision Criteria—EPA has selected Option Two as the technology basis for proposing pretreatment standards for existing sources. This option will ensure removal of the bulk of the zinc, nickel, and copper at the industrial site. The Agency has selected Option Two because at-the-source metals removal provides for more removal of the metals of concern at less cost. In selecting this option, EPA does not preclude the imposition of more stringent standards by a POTW as needed to ensure compliance by the POTW with its NPDES permit.

XIII. Pretreatment Standards for New Sources

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources (PSNS) at the same time that it promulgates NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated technologies including process changes, in-plant controls, and end-of-pipe treatment technologies, and to use plant site selection to ensure adequate treatment system installation.

The Agency evaluated the same options for new discharges to POTW's as were evaluated for existing discharges to POTW's.

Selection of New Source Pretreatment Technology and Decision Criteria—EPA has selected OPTION TWO as the technology basis for proposed pretreatment standards for new sources. This option will provide the removal of the heavy metals at-the-source for greater efficiency of removal at less cost. In selecting this option, EPA does not preclude the imposition of more stringent standards by a POTW as needed to ensure compliance by the POTW with its NPDES Permit.

XIV. Regulated Pollutants

The basis upon which the controlled pollutants were selected, as well as the general nature and environmental effects of these pollutants, is set out in Section VI of the Development Document. Some of these pollutants are designated as toxic under section 307(a) of the Act, and no evidence has been

found to warrant removal of any pollutant from the toxics list.

A. BPT

The pollutants in the sulfate turpentine subcategory controlled by this regulation include the same pollutants as those controlled by the previously promulgated regulations for the other subcategories, specifically BOD5, TSS, and pH. The discharge of these pollutants is controlled by maximum monthly average and maximum daily mass effluent limitations (pounds per 1,000 pounds of processed material), which are calculated by multiplying raw waste loads concentrations from one of the two stand-alone sulfate turpentine plants, average flow from the sampling period, treatability performance data from the 1976 reguations, and variability factors from the petroleum refining category.

B. BCT

As noted in the section of the preamble entitled BCT Effluent Limitations, EPA identified no additional reasonably available technologies either in the Gum and Wood Chemicals Industry or transferrable from other industrial categories for control of the conventional pollutants. Therefore, BCT is proposed at the same level as BPT.

C. BAT and NSPS

Appendix D is a list of toxic pollutants which were found in treated effluents at more than two plants and in concentrations greater than available analytical detection limits. EPA concludes that the organic toxic pollutants will be effectively controlled by biological treatment as exemplified by activated sludge or aerated lagoons even though the organic toxics are not expressly regulated by numerical limitations.

(1) Toxic Pollutants—the toxic pollutants expressly controlled by BAT and NSPS are copper, nickel, and zinc which are subject to numerical limitations expressed as maximum concentrations at the source of the metal bearing wastewater. These pollutants are controlled because of their use in the processing of turpenes and rosins.

D. PSES and PSNS

The pollutants controlled by proposed PSES and PSNS include copper, nickel, and zinc. EPA is limiting these pollutants becasue they may pass through POTW's and because these pollutants may interfere with bilogical treatment. Recent studies have shown that these metals may concentrate in the sludge at activated sludge plants and interfere with proper operation of anaerobic digestion. The PSES and PSNS effluent limitations are expressed as maximum monthly average and maximum day concentrations (mg/1).

At this time, the Agency has not identified any additional unit processes in use in this industry other than biological treatment for control of the organic toxic pollutants. Based upon the data available from biological treatment units in the industry, the organic toxic pollutants are removed by biological treatment to low levels and they do not interfere with biological treatment as used by POTWs.

XV. Pollutants and Subcategories Not Regulated

The Settlement Agreement contained provisions authorizing the exclusion from regulation, in certain instances, of toxic pollutants and industry subcategories. These provisions have been re-written in a Revised Settlement Agreement which was approved by the District Court for the District of Columbia on March 9, 1979.

Paragraph 8(a)(iii) of the Revised Settlement Agreement allows the Administrator to exclude from regulation toxic pollutants not detectable by section 304(h) analytical methods or other state-of-the-art methods. The toxic pollutants not detected and therefore excluded from regulation are listed in Appendix B to this notice.

While the Settlement Agreement required EPA to regulate the entire Gum and Wood Chemicals Industry listed under the U.S. Department of Commerce, Bureau of the Census, Standard Industrial Classification (SIC) code 2861, Paragraph 8(a)(iv) of the Revised Settlement Agreement authorizes EPA to exclude portions of the industry from regulation. The Agency first developed a profile of the total gum and wood chemicals industry. After this initial profile information was assembled and reviewed and screening samples from all subcategories except Char and Charcoal Briquets were collected and analyzed, the Agency concluded that three subcategories should be excluded from regulation because they either do not discharge process wastewater or they do not discharge significant quantities of process wastewater.

The Char and Charcoal Briquets subcategory produces its products by the thermal decomposition of raw wood. Seventy-seven potential plants were identified in the industry profile. Of the forty-five plants responding, none discharged process wastewater. BPT regulations promulgated May 18, 1976 require zero discharge of process wastewater. The Agency concludes, therefore, that additional effluent guidelines or standards for this subcategory are unnecessary.

The Essential Oils subcategory currently consists of nine plants which extract cedarwood oil by steaming cedarwood sawdust in pressure retorts to remove the oil from the wood particles. The process wastewater from eight of the plants is self-contained by a lagoon or by spray irrigation. The ninth plant at full operation discharges approximately 15,000 gallons per day to a POTW. The Agency does not believe that national PSES for only one plant are either appropriate or necessary. No new sources are expected to enter the market because of low market demand and shortages of raw materials.

The Gum Rosin and Turpentine subcategory produces its products by the distillation of pine oleoresin which is obtained by exposing the sapwood of the pine tree. This subcategory consists of seven plants, of which six have achieved zero discharge through the use of evaporation/percolation lagoons. The seventh plant discharges approximately 2,300 gallons of gum rosin wastewater to a POTW. The Agency does not believe that national PSES for only one plant are either appropriate or necessary. No new sources are expected to enter the market and existing plants are expected to close within the next ten years for economic reasons.

XVI. Monitoring Requirements

The Agency intends to establish a regulation requiring permittees to conduct additional monitoring when they violate permit limitations on indicator pollutants. The provisions of such monitoring requirements will be specified for each permittee and may include analysis for some or all of the toxic pollutants or the use of biomonitoring techniques. The additional monitoring is designed to determine the cause of the violation, necessary corrective measures, and the identity and quantity of toxic pollutants discharged. Each violation will be evaluated on a case-by-case basis by the permitting authority to determine whether or not the additional monitoring contained in the permit is necessary.

The Agency's sampling data shows benzene, toluene, ethylbenzene, and phenol in the untreated gum and wood chemicals wastewater in the range of below the detection limit to 30 ppm. The data also reveal that BPT technology (i.e. efficient biological treatment) reduces each of these pollutants to concentrations of 200 ppb or less. At these levels, there is no known cost effective technology applicable on a nationally uniform basis. However, individual plants are likely to be able to

take corrective action (e.g. in-plant controls) if organic toxic residuals become excessive and contribute to problems in meeting BPT limitations. Accordingly, if the BOD5 limitation is violated, then the permitting authority may require that the permittee monitor the organic toxic pollutants otherwise controlled by the BPT technology.

XVII. Costs, Effluent Reduction Benefits, and Economic Impacts

Exective Order 12044 requires EPA and other agencies to perform regulatory analyses of certain regulations. (See 43 FR 12661 (March 23, 1978)). EPA's proposed regulations for implementing Executive Order 12044 require a regulatory analysis for major significant regulations involving annualized compliance costs of more than $100 million or meeting other specified criteria. (See 43 FR 29891 (July 11, 1978)). Where these criteria are met, the proposed regulations require EPA to prepare a formal regulatory analysis, including an economic impact analysis and an evaluation of alternatives such as: (1) Alternative types of regulations, (2) alternative stringency levels, (3) alternative timing, and (4) alternative methods of ensuring compliance.

The proposed regulations for the gum and wood chemicals industry do not meet the proposed criteria for a formal regulatory analysis. Nonetheless, this proposed rulemaking satisfies the formal regulatory analysis requirements. While the Clean Water Act does not permit consideration of alternative timing or alternative methods of ensuring compliance, EPA has considered alternative stringency levels and alternative types or regulations, as discussed above. Moreover, the Agency has performed a detailed analysis of the economic impact of these proposed regulations.

EPA's economic impact assessment is set forth in *Economic Impact analysis of Proposed Effluent Limitations Guidelines, New source Performance Standards and Pretreatment Standards for the Gum and Wood Chemicals Point source Category.* November 1979. This report details the investment and annualized costs for the industry as a whole and for model plants covered by the proposed gum and wood chemicals regulations. The data underlying the analysis were obtained from the Development Document, publicly available financial studies and surveys, and the results of EPA's economic survey program described under Data Gathering Efforts. The report assesses the impact of compliance costs in terms of plant closures, production changes, price changes, employment changes, local community impacts, and balance of trade effects.

The methodology used in the economic analysis employs estimation of the profit reduction expected for plants currently operating in this industry assuming no cost pass-through. Compliance costs as a percent of sales revenue were estimated as a point of reference to qualitatively judge the possibility of recovering all or part of the compliance costs. The analysis was carried out for each of the 20 major plants operating in this industry affected by these regulations.

The decision criteria for plant closures are based on both compliance costs as a percent of estimated profits before taxes and compliance costs as a percent of sales revenue. Plants are projected to close if compliance costs are more than 50 percent of profits and more than 5 percent of sales. Even though the basis of competition for many of the products produced in this industry is price, and the industry is operating at relatively low capacity utilization rates, the trend to upgrading the value of products produced, the relative scarcity of raw materials, and the expected higher prices for competitive products based on petroleum derivatives make small price pass-through possible. It is expected that costs less than 5 percent of sales would be relatively easily recovered. The Agency projects that 7 of the 20 plants may be required to make pollution control expenditures to comply with the proposed effluent limitations. This estimate is based on a telephone survey of the industry which determined metallic catalyst usage at each plant. The Agency further estimates that the remaining plants will be able to meet the proposed limitations without additional expenditure.

The Agency estimates that the total investment costs for all the proposed regulations will approximate $588.4 thousand, and that associated annualized costs (including interest, depreciation, operation and maintenance) will approximate $1.22 million. Further, the Agency projects that the proposed regulations will not result in any plant closures, unemployment, or effects on production. It is not believed that the balance of trade will be affected at all. EPA believes that the rate of entry into this industry will not be affected by the proposed regulations. Diversion of capital from projects intended to upgrade products to higher value materials could reduce the long term potential for profit improvement in this industry. The costs, effluent reduction benefits, and economic impacts for each proposed regulation are summarized below.

(A) BPT—There are two sulfate turpentine producing plants that discharge wastewater to the Nation's waters and are thus subject to proposed BPT limitations. EPA estimates that the proposed limitations will result in the removal of 70 and 80.3 pounds per day of BOD5 and TSS, respectively.

EPA estimates that compliance with proposed BPT limitations may require a total investment of $104.5 thousand. Annualized costs may equal a total of $183 thousand. EPA does not expect the proposed BPT requirements to result in any closures, job losses, production losses, community effects or balance of trade effects.

(A) BAT—There are 8 Gum and Wood Chemicals plants that discharge wastewater directly to the Nation's waters. Three of these plants currently modify rosins by use of zinc as a catalyst and thus subject to proposed BAT limitations. These limitations will result in the removal of approximately 44 pounds per day of zinc.

EPA estimates that compliance with proposed BAT limitations may require a total investment of $225.6 thousand by these three plants, assuming BPT and proposed BPT for the Sulfate Turpentine subcategory are already in place. Annualized costs may equal a total of $512 thousand. Costs of up to five percent of sales may be passed on through price increases. EPA does not expect the proposed BAT requirements to result in any closures, job losses, production losses, community effects or balance of trade effects.

(B) NSPS—There have been virtually no new plants constructed in this industry over the past 10 years. At the current projected rates of growth for this industry the Agency expects that little or no new plant construction will be experienced over the next five years. One tall oil fractionation plant has been announced to come on stream in 1980. Since this plant is relatively small (35,000 tons/year) and will discharge its wastewater to a pulp and paper mills treatment system, the Agency estimates that no additional capital investment or operating costs will be incurred.

In general the new source performance standards will have little short term impact on industry growth and plant construction or expansion plans but will raise the overall price levels required to encourage new capacity. However, as indicated above, little new plant capacity is needed to meet the industry growth projections.

(C) PSES—There are 12 plants that discharge process related wastewater to POTWs or other industrial wastewater

treatment systems. EPA estimates that the total investment costs for 4 of these plants to comply with the proposed PSES regulations will be approximately $258.3 thousand. PSES annualized costs may equal $521 thousand. Costs of up to five percent of sales may be passed on through price increases. EPA does not expect the proposed PSES requirements to result in any closures, job losses, production losses, community effects, or balance of trade effects.

(D) PSNS—As pointed out in connection with NSPS, there have been virtually no new plants constructed in this industry over the past 10 years and the Agency expects little or no new plant construction over the next five years.

In general the new source performance standards will have little short term impacts on industry growth and plant construction or expansion plans but will raise the overall price levels required to encourage new capacity. However, as indicated above, little new plant capacity is needed to meet the industry growth projections.

XVIII. Small Business Administration Financial Assistance

There are two Small Business Administration programs that may be important sources of funding for the Gum and Wood Chemicals Manufacturing Point Source Category. They are the SBA's Economic Injury Loan Program and Pollution Control Financing Guarantees.

Section 8 of the FWPCA authorizes the SBA, through its Economic Injury Loan Program, to make loans to assist any small business concern in effecting additions to or alterations in equipment, facilities, or methods of operation in order to meet water pollution control requirements under the Federal Water Pollution Control Act, if the concern is likely to suffer a substantial economic injury without such assistance. This program is open to small business firms as defined by the Small Business Administration. Loans can be made either directly by SBA or through a bank using an SBA guarantee. The interest on direct loans depends on the cost of money to the Federal government and is currently set at 7⅜ percent. Loan repayment periods may extend up to thirty years depending on the ability of the firm to repay the loan and the useful life of the equipment. SBA loans made through banks are at somewhat higher interest rates. Firms in the Gum and Wood Chemicals Manufacturing Point Source Category may be eligible for direct or indirect SBA loans. For further details on this Federal loan program please contact: Coordinator— Mr. Sheldon Sacks, Environmental Protection Agency, Financial Assistance Coordinator, Office of Analysis & Evaluation (WH–586), 401 M Street SW., Washington, D.C. 20460, Telephone: (202) 755–3624.

In addition, the Small Business Investment Act, as amended by Public Law 94–305, authorizes SBA to guarantee the payments on qualified contracts entered into by eligible small businesses to acquire needed pollution facilities when the financing is provided through taxable and tax-exempt revenue or pollution control bonds. This program is open to all eligible small businesses. Bond financing with SBA's guarantee of the payments make available long term (20–25 years), low interest (usually 5% to 7%) financing to small businesses on the same basis as that available to larger national or international companies. For further details on this program write to SBA, Pollution Control Financing Division, Office of Special Guarantees, 1815 North Lynn Street, Magazine Building, Rosslyn, Virginia 22209 (703) 235–2900.

XIX. Nonwater Quality Aspects of Pollution Control

The elimination or reduction of one form of pollution may aggravate other environmental problems. Therefore, Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of these regulations on air pollution, solid waste generation, water scarcity, and energy consumption. While it is difficult to balance pollution problems against each other and against energy utilization, EPA is proposing regulations which it believes best serve often competing national goals.

The following are the non-water quality environmental impacts (including energy requirements) associated with the proposed regulations:

A. Air Pollution—Imposition of BPT, BCT, BAT, NSPS, PSES and PSNS will not create any substantial increase in air pollution problems, although some increase in hydrocarbon content may occur if increased aeration in the biological treatment systems causes additional stripping of volatile organic compounds. Metals removal technology is accomplished in the aqueous phase and no releases of metals or hydrocarbons should result.

B. Solid Waste—The major non-water quality aspect of the proposed regulation will be the generation of metal sludges from the metals removal processes required for the rosin derivatives and sulfate turpentine operation. These sludges will contain high concentrations of the inorganic toxic pollutants copper and nickel or zinc. While the Agency has proposed certain solid wastes as hazardous (43 FR 58946, 58959 December 18, 1978) none of the wastes from the gum and wood chemicals industry are included. Disposal of these sludges may, however, become subject to RCRA regulation as finally promulgated.

Additional sludges may be generated as the result of the proposed BPT regulations for sulfate turpentine. These biological sludges usually accumulate in the aerated lagoons and settling ponds and must be dredged and disposed of periodically.

The Agency estimates that up to 500 pounds/day (668 gallons/day) of metal bearing and biological sludges may be generated as a result of these regulations. Hauling costs of $0.12 per gallon in 1977 dollars was used in estimating the disposal costs included in the annual operating costs.

C. Consumptive Water Loss—Some minor water loss may occur as a result of these regulations. Water becomes entrained in the hydroxide flocs generated in the metals precipitation units and would be lost to landfill. Some evaporative losses may occur as a result of increased aeration for biological treatment. However, the quantities of water involved are not significant and the industry is located in areas with sufficient water supplies.

D. Energy Requirements—Achievement of the proposed regulations will require additional energy use for pumps at the metals precipitation units for BAT and some additional aerators for BPT sulfate turpentine. Energy cost estimates are reflected in the operation and maintenance costs in the Development Document. EPA estimates electrical energy consumption will increase less than 420,000 kilowatt hours per year.

XX. Best Management Practices

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" ("BMPs"), described under Authority and Background. EPA intends to develop BMPs which: (1) Apply to all industrial sites; (2) Apply to a designated industrial category; and (3) offer guidance to permit authorities in establishing BMPs required by unique circumstances at a given plant.

EPA is considering promulgating BMP's specific to the Gum and Wood Chemicals Industry. A separate study of

the seven subcategories will be initiated at a later date.

XXI. Upset and Bypass Provisions

An issue of recurrent concern has been whether industry guidelines should include provisions authorizing noncompliance with effluent limitations during periods of "upset" or "bypass." An upset, sometimes called an "excursion," is unintentional noncompliance occurring for reasons beyond the reasonable control of the permittee. It has been argued that an upset provision in EPA's effluent limitations guidelines is necessary because such upsets will inevitably occur due to limitations in even properly operated control equipment. Because technology-based limitations are to require only what technology can achieve, it is claimed that liability for such situations is improper. When confronted with this issue, courts have divided on the question of whether an explicit upset or excursion exemption is necessary or whether upset or excursion incidents may be handled through EPA's exercise of enforcement discretion. Compare *Marathon Oil Co.* v. *EPA*, 564 F. 2d 1253 (9th Cir. 1977) with *Weyerhaeuser* v. *Costle, supra.* See also *American Petroleum Institute* v. *EPA*, 540 F. 2d 1023 (10th Cir. 1976); *CPC International, Inc.* v. *Train*, 540 F. 2d 1320 (8th Cir. 1976); *FMC Corp.* v. *Train*, 539 F. 2d 973 (4th Cir. 1976).

While an upset is an unintentional episode during which effluent limits are exceeded, a bypass is an act of intentional noncompliance during which waste treatment facilities are circumvented in emergency situations. Bypass provisions have, in the past, been included in NPDES permits.

EPA has determined that both upset and bypass provisions should be included in NPDES permits, and has recently promulgated NPDES regulations which include upset and bypass permit provisions. See 44 FR 32905 (June 7, 1979). The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-based effluent limitations. The bypass provision authorizes bypassing to prevent loss of life, personal injury or severe property damage. Consequently, although permittees in the Gum and Wood Chemicals Industry will be entitled to upset and bypass provisions in NPDES permits, these proposed regulations do not address these issues.

XXII. Variances and Modifications

Upon the promulgation of final regulations, the numerical effluent limitations for the appropriate subcategory must be applied in all Federal and state NPDES permits thereafter issued to Gum and Wood Chemicals direct dischargers. In addition, on promulgation, the pretreatment limitations are directly applicable to indirect dischargers.

For the BPT effluent limitations, the only exception to the binding limitations is EPA's "fundamentally different factors" variance. See *E. I. duPont de Nemours and Co.* v. *Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra.* This variance recognizes factors concerning a particular discharger which are fundamentally different from the factors considered in the industry-wide rulemaking. Although this variance clause was set forth in EPA's 1973–1976 industry regulations, it now will be included only in the NPDES regulations. (See 44 FR 32854, 32950 (June 7, 1979) for the text and explanation of the "fundamentally different factors" variance).

The BAT limitations in these regulations are subject to EPA's "fundamentally different factors" variance provision. The Act also provides that BAT limitations for conventional and non-conventional pollutants are subject to modifications under sections 301(c) and 301(g) of the Act. According to section 301(j)(1)(B), applications for those modifications must be filed within 270 days after promulgation of final effluent limitations guidelines. See 43 FR 40859 (Sept. 13, 1978). Under section 301(1) of the Act these statutory modifications are not applicable to toxic pollutants. Likewise, limitations on conventional and non-conventional pollutants used as "indicators" for toxic pollutants are not subject to section 301(c) or section 301(g) modifications, unless the discharger demonstrates that a waste stream does not contain any of the toxic pollutants for which the "indicator" was designed to demonstrate removal.

Pretreatment standards for existing sources are subject to the "fundamentally different factors" variance and credits for pollutants removed by POTWs. See 40 CFR 403.7, 403.13; 43 FR 27736 (June 26, 1978). Pretreatment standards for new sources are subject only to the credits provision in 40 CFR 403.7. New source performance standards are not subject to EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. See *duPont* v. *Train, supra.*

XXIII. Relationship to NPDES Permits

The BAT limitations for the Rosin-based Derivatives and Sulfate Turpentine subcategories and BPT, BCT, and NSPS limitations for four subcategories in these regulations will be applied to individual Gum and Wood Chemicals Industry plants through NPDES permits issued by EPA or approved state agencies, under section 402 of the Act. The preceding section of this preamble discussed the binding effect of these regulations on NPDES permits, except to the extent that variances are expressly authorized. This section describes several other aspects of the interaction of these regulations and NPDES permits.

One matter which has been the subject of differing judicial views is the scope of NPDES permit proceedings in the absence of effluent limitations guidelines and standards. Under the NPDES regulations, states and EPA regions issuing NPDES permits prior to promulgation of these regulations must include a "reopener clause," providing for permits to be modified to incorporate "toxics" regulations when they are promulgated. See 44 FR 32906 (June 7, 1979). To avoid cumbersome modification procedures, EPA has adopted a policy of issuing short-term permits, with a view toward issuing long-term permits only after promulgation of these and other BAT regulations. The Agency has published rules designed to encourage states to do the same. See 43 FR 58066 (December 11, 1978). However, in the event that EPA finds it necessary to issue long-term permits prior to promulgation of BAT regulations, EPA and states will follow essentially the same procedures utilized in many cases of initial permit issuance. The permit issuer will assess the appropriate technology levels and limitations on a case-by-case basis, on consideration of the statutory factors. See *U.S. Steel Corp.* v. *Train*, 556 F. 2d 822, 844, 854 (7th Cir. 1977). In these situations, EPA documents and draft documents (including these proposed regulations and supporting documents) are relevant evidence, but not binding, in NPDES permit proceedings. See 44 FR 32854 (June 7, 1979).

Another question is the effect of these regulations on the powers of NPDES permit issuing authorities. The promulgation of these regulations does not restrict the power of any permit-issuing authority to act in any manner consistent with law or these or any other EPA regulations, guidelines, or policy. For example, the fact that these regulations do not control a particular pollutant does not preclude the permit issuer from limiting such pollutant on a case-by-case basis, when it is necessary to carry out the purposes of the Act. In addition, to the extent that state water quality standards or other provisions of

state of Federal law require limitation of pollutants not covered by these regulations (or require more stringent limitations on covered pollutants, such limitations *must* be applied by the permit-issuing authority.

One additional topic that warrants discussion is the operation of EPA's NPDES enforcement program, of which many aspects have been considered in developing these regulations. The Agency wishes to emphasize that although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary. EPA has exercised and intends to exercise that discretion in a manner which recognizes and promotes good faith compliance efforts and conserves enforcement resources for those who fail to make good faith efforts to comply with the Act.

XXIV. Summary of Public Participation

On January 19, 1979, the Agency circulated for public comment a draft technical report to a number of interested parties. The report was made available to members of the Pulp Chemicals Association, the Natural Resources Defense Council, the U.S. Department of Commerce, EPA Regional Offices, and some states that have authority to issue National Pollution Discharge Elimination System (NPDES) permits. This document included the technical information that served as the basis for the regulations proposed at this time, but did not make recommendations or present conclusions. Reviewers of the technical report were asked to forward to the Agency their written comments by March 9, 1979; they also were invited to a meeting March 23, 1979 where they could discuss their comments with the technical and legal staffs of the Agency. However, since there were no requests for time for oral presentations, the meeting was cancelled. A brief summary of the written comments is presented here.

Comment: Activated carbon was identified as a candidate treatment technology because of its ability to remove toxic pollutants which may remain after biological treatment. Since BPT treatment apparently reduces the organic toxic pollutants to fairly low levels, should activated carbon be required?

Response: The data show that biological treatment results in substantial reductions of organic toxic pollutants. Also, the high cost of activated carbon treatment for organic toxic pollutants makes this type of treatment expensive for this industry. Activated carbon will not be the basis for BAT or NSPS.

Comment: Regulations should be limited to periodic testing of only those substances which have been demonstrated to be present in significant concentrations at any given location rather than monitoring for the full 129 toxic pollutants.

Response: The proposed regulations identify certain pollutants and identify effluent limitations for those pollutants. The regulations do not require monitoring for the full 129 toxic pollutants. However, this does not preclude more stringent effluent limits or more stringent monitoring requirements at the option of the NPDES authority, as required to carry out the Act.

Comment: The narrative description and the results of the sample analyses suggest that the sulfate turpentine subcategory could be further subdivided as follows:

a. Sulfate turpentine

b. Sulfate turpentine/flavors and fragrances

c. Sulfate turpentine/other

Response: The proposed regulations do not subdivide the sulfate turpentine subcategory because of the small number of plants (seven) and because the Agency believes it has addressed the proposed subcategorization by basing the proposed sulfate turpentine guidelines on raw waste load data from a plant producing sulfate turpentine/flavor and fragrances. This segment utilizes most of the processes of the other two proposed subcategories plus the use of metal catalyst.

Comment: The narrative description of the sampling program in Section III of the contractor's technical report indicates that the screening and verification samplings were two distinct efforts when in fact this was not the case at some plants.

Response: The description of the sampling program in Section III of the Development Document to accompany these proposed regulations more fully explains the methodology used in screening and verification sampling.

Comment: If samples were collected on three consecutive days, the presence of a pollutant in one sample but not in the other two raises the question of whether the pollutant actually occurred, especially if any type of equalization is employed.

Response: In only three cases was a toxic pollutant found on one day during the three-day sampling where it was not also present in the other two samples. In each case, discussions with plant personnel have not revealed any source for the pollutant or any reason for its presence.

Comment: The presence of methylene chloride in the water samples was questioned, since it is neither used in the plant nor present in the raw material, but is a common solvent found in chemical laboratories.

Response: The Agency has confirmed that several research and development laboratories located on plant sites maintain stocks of methylene chloride. Methylene chloride also is required by the EPA sampling methods as a solvent rinse for some of the sample fraction containers. Because of the potential for contamination inherent in the sampling methodology, methylene chloride is not being considered for regulation. However, two plants which were not sampled do use methylene chloride as a process solvent. Methylene chloride is a volatile organic toxic pollutant which should be reduced to the same low levels by bioligical treatment as benzene, toluene, and ethylbenzene.

Comment: Some participants questioned the results of the BOD5 and BOD10 analyses since some BOD10 results were lower than the BOD5 results for the same samples, and significant variances were noted between the sampling results and individual plant results.

Response: The standard method for analysis of BOD requires that the sample must be diluted such that biochemical oxidation of the organics present causes depletion of the available oxygen within the range of 2 to 6 mg/1. In some cases where the dilution required was one part waste to 25 parts dilution water or higher, errors resulted which gave erroneous results. The BOD data, while used to give an indication of the magnitude of the BOD in the waste stream, was not used in determining any of the numerical limitations proposed here.

Comment: One participant questioned the results of the analyses for phenol in light of the fact that phenol by the GC/MS method was greater than total phenol by "Standard Methods." Total phenol by "Standard Methods" should be greater than phenol by GC/MS.

Response: While total phenols by "Standard Methods" should yield higher results than phenols by GC/MS, there are a number of compounds or agents which may interfere with the "Standard Methods" total phenols test. While "Standard Methods" describes several methods for eliminating these interferences, it also notes that "some of the treatment procedures used for removal of interferences before analysis may result in an unavoidable loss of certain types of phenols." While attempting to eliminate interferences suspected present in gum and wood

chemicals waste streams, such a loss may have occurred.

Comment: The contractor's report identified several means of oxidizing phenols. The data presented by the contractor indicate that phenols may be reduced by biological treatment. Is biological treatment an acceptable alternative?

Response: Yes. Biological treatment appears to remove the organic toxics of concern here. However, this treatment technology does not preclude the selection of other wastewater treatment alternatives which provide equivalent or better levels of treatment.

Comment: The industry has limited experience with metals removal by pH adjustment. Two problems are apparent. First, metal hydroxides are difficult flocs to settle or filter, and second, the waste cake or slurry may be classified as hazardous, thus affecting the cost of disposal. Expansion of the discussion of technologies available and the costs basis would be helpful.

Response: The discussion of metals removal in the Development Document has been expanded. Removal of metals by pH adjustment still appears to be the most cost-effective form of treatment. The hydroxide flocs developed by this form of treatment may be difficult to settle or filter by themselves, but flocculant aids or filtering aids are available and should enhance removals. The waste cake or slurry may be classified as hazardous. Determination of whether the waste cake or slurry is hazardous cannot be made, since the regulations for hazardous substances have not been promulgated. The costs for transportation of the waste cake or slurry are based upon 1977 costs of hauling. An estimate of the cost which might be incurred if the waste is hazardous is contained in Section XIX.

XXV. Solicitation of Comments

EPA invites and encourages public participation in this rulemaking. The Agency asks that any deficiencies in the record of this proposal be specifically addressed and that suggested revisions or corrections be supported by data.

EPA is particularly interested in receiving additional comments and information on the following issues:

1. The Agency is proposing treatment for metals at the source for the Sulfate Turpentine and Rosin-Based Derivatives subcategories. Because the processes which utilize metals are operated intermittently and the resulting waste streams are generally small in comparison to total plant flow, the Agency is proposing application of numerical effluent guidelines limitations at the metals source waste stream. The Agency solicits comments on this regulatory approach to control of toxic pollutants.

2. The Agency requests that reviewers of this proposal point out errors in data, tabulation, possible misinterpretation of industry submitted data, or any possible error in the logic of these proposed rules. Comments of this nature should be documented with copies of the originally submitted information, together with either a discussion explaining the participants interpretation of the data or a discussion of the participants logical approach to the rulemaking.

3. The Agency's sampling data shows benzene, toluene, ethlybenzene, and phenol in wastewater from Gum and Wood Chemicals plants. BPT technology reduces the concentration of these pollutants to 200 ppb or less. Accordingly, the Agency is proposing that if the BPT BOD5 limitation is violated, the permitting authority may require that the permittee monitor the organic toxic pollutants otherwise controlled by the BPT technology. EPA requests the submission of data which either support or refute its belief that when BOD5 is removed to low concentrations, the concentrations of organic toxic pollutants are substantially less than when the concentration of BOD5 is high.

4. Characterization of the nature and amount of sludges generated by gum and wood chemicals plants and the costs of sludge handling and disposal are important to these regulations and requlations being developed by EPA's Office of Solid Waste under authority of the Resource Conservation and Recovery Act (RCRA). The Agency solicits additional data concerning the quantities, pollutant content, and handling and disposal costs for all solid wastes.

5. The cost of control technology is a significant issue. In order to perform a meaningful comparison of EPA cost data and industry cost data, EPA requests detailed information on salient design and operating characteristics; actual installed cost (not estimates of replacement costs) for each unit treatment operation or piece of equipment (e.g., screens, clarifiers, aeration equipment, etc.); the date of installation and the amount of installation labor provided by plant personnel; and the actual cost for operation and maintenance, broken down into units of usage and cost for energy (kilowatt hours or equivalent), chemicals, and labor (work-years or equivalent).

6. EPA has obtained from the industry a substantial data base for the control and treatment technologies which serve as the basis for the proposed regulations. Plants which have not submitted data or engineering studies other than those already submitted are requested to forward these data to EPA. These data should be individual data points, not averages or other summary data, including flow, production, and all pollutant parameters for which analyses were run. Please submit any qualifications to the data, such as descriptions of facility design, operating procedures, and upset problems during specified periods.

7. EPA requests that POTWs which receive wastewaters from gum and wood chemicals plants submit data which would document the occurrence of interference with collection system and treatment plant operations, permit violations, sludge disposal difficulties, or other incidents attributable to the pollutants contained in gum and wood chemicals plant's discharges to POTWs.

Dated: November 20, 1979.

Douglas M. Costle,

Administrator.

XXVI. Appendices

Appendix A—Abbreviations, Acronyms and Other Terms Used in This Notice

Act

The Clean Water Act.

Agency

The U.S. Environmental Protection Agency.

At-the-source

At a reaction kettle or other designated site where intermediates are modified by use of a metallic catalyst.

BAT

The best available technology economically achievable, under section 301(b)(2)(A) of the Act.

BCT

The best conventional pollutant control technology, under section 301(b)(2)(E) of the Act.

BMP

Best management practices, under section 304(e) of the Act.

BPT

The best practicable control technology currently available, under section 301(b)(1) of the Act.

Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 et eg.), as amended by the Clean Water Act of 1977 (Pub. L. 95–217).

Direct discharger

A facility which discharges or may discharge pollutants into waters of the United States.

Indirect Discharger

A facility which discharges or may discharge pollutants into a publicly owned treatment works.

NPDES

National Pollutant Discharge Elimination System, under section 402 of the Act.

NSPS

New source performance standards, under section 306 of the Act.

POTW

Publicly owned treatment works.

PSES

Pretreatment standards for existing sources of indirect discharges, under section 307(b) of the Act.

PSNS

Pretreatment standards for new sources of direct discharges, under section 307(b) and (c) of the Act.

RCRA

Resource Conservation and Recovery Act of 1976, Amendments to Solid Waste Disposal Act (Public Law 94–580).

Appendix B—Toxic Pollutants not Detected in Treated Effluents

Compound name

1. acenaphthene*
2. acrolein*
3. acrylonitrile*
4. benzidine*
5. carbon tetrachloride (tetrachloromethane)*
6. chlorobenzene
7. 1,2,4-trichlorobenzene
8. hexachlorobenzene
9. 1,2-dichloroethane
10. hexachloroethane
11. 1,1-dichloroethane
12. 1,1,2-trichloroethane
13. 1,1,2,2-tetrachloroethane
14. bis(chloromethyl) ether
15. bis(2-chloroethyl) ether
16. 2-chloroethyl vinyl ether (mixed)
17. 2-chloronaphthalene
18. 2,4,6-trichlorophenol
19. parachlorometa cresol
20. 2-chlorophenol*
21. 1,2-dichlorobenzene
22. 1,3-dichlorobenzene
23. 1,4-dichlorobenzene
24. 3,3'-dichlorobenzidine
25. 1,1-dichloroethylene
26. 1,2-trans-dichloroethylene
27. 2,4-dichlorophenol*
28. 1,2-dichloropropane
29. 1,2-dichloropropylene (1,2-dichloropropene)
30. 2,4-dimethylphenol*
31. 2,4-dinitrotoluene
32. 2,6-dinitrotoluene
33. 1,2-diphenylhydrazine*
34. fluoranthene*
35. 4,chlorophenyl phenyl ether
36. 4-bromophenyl phenyl ether
37. bis(2-chloroisopropyl) ether
38. bis(2-chloroethoxy) methane
39. methyl chloride (chloromethane)
40. methyl bromide (bromomethane)
41. bromoform (tribromomethane)
42. dichlorobromomethane
43. trichlorofluoromethane
44. dichlorodifluoromethane
45. chlorodibromomethane
46. hexachlorobutadiene*
47. hexachlorocyclopentadiene*
48. isophorone*
49. nitrobenzene*
50. 2-nitrophenol
51. 4-nitrophenol
52. 2,4-dinitrophenol*
53. 4,6-dinitro-o-cresol
54. N/nitrosodimethylamine
55. N-nitrosodiphenylamine
56. N-nitrosodi-n-propylamine
57. pentachlorophenol*
58. bis(2-ethylhexyl) phthalate
59. butyl benzyl phthalate
60. di-n-butyl phthalate
61. di-n-octyl phthalate
62. diethyl phthalate
63. dimethyl phthalate
64. benzo(a)anthracene (1,2-benzanthracene)
65. benzo(a)pyrene (3,4-benzopyrene)
66. 3,4-benzofluoranthene
67. benzo(k)fluoranthane (11,12-benzofluoranthene)
68. chrysene
69. acenaphthylene
70. anthracene
71. benzo(ghi)perylene (1,12-benzoperylene)
72. fluorene
73. phenanthrene
74. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
75. indeno (1,2,3-cd)pyrene (2,3-o-phenylenepyrene)
76. pyrene
77. tetrachloroethylene*
78. trichloroethylene*
79. vinyl chloride (chloroethylene)*
80. aldrin*
81. dieldrin*
82. chlordane (technical mixture and metabolites)*
83. 4,4'-DDT
84. 4,4'-DDE (p,p'-DDX)
85. 4,4'-DDD (p,p'-TDE)
86. a-endosulfan-Alpha
87. b-endosulfan-Beta
88. endosulfan sulfate
89. endrin
90. endrin aldehyde
91. heptachlor
92. heptachlor epoxide
93. a-BHC-Alpha
94. b-BHC-Beta
95. r-BHC(lindane)-Gamma
96. g-BHC-Delta
97. PCB-1242(Arochlor 1242)
98. PCB-1254(Arochlor 1254)
99. PCB-1221(Arochlor 1221)
100. PCB-1232(Arochlor 1232)
101. PCB-1248(Arochlor 1248)
102. PCB-1260(Arochlor 1260)
103. PCB-1016(Arochlor 1016)
104. toxaphene*
105. antimony (total)*
106. asbestos (fibrous)*
107. beryllium (total)*
108. cyanide (total)*
109. mercury (total)*
110. silver (total)*
111. thallium (total)*
112. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) [1]

*Specific compounds and chemical classes as listed in the Consent Decree.

Appendix C—Toxic Pollutants Detected In Final Effluent Samples

1. benzene*
2. 1,1,1-trichloroethane
3. chloroethane
4. chloroform (trichloromethane)*
5. ethylbenzene*
6. naphthalene*
7. phenol*
8. toluene*
9. methylene chloride (dichloromethane)
10. arsenic (total)*
11. cadmium (total)*
12. chromium (total)*
13. copper (total)*
14. lead (total)*
15. nickel (total)*
16. selenium (total)*
17. zinc (total)*

40 CFR Part 454 is revised to read as follows:

PART 454—GUM AND WOOD CHEMICALS INDUSTRY POINT SOURCE CATEGORY

General Provisions

Sec.

454.01 Applicability.
454.02 Definitions.
454.03 Monitoring requirements.

Subpart A—Char and Charcoal Briquets Subcategory

454.10 Applicability: description of the char and charcoal briquets subcategory.
454.12 Effluent limitations representing the degree or effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.13 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.14 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.15 New source performance standards (NSPS).
454.16 Pretreatment standards for new sources (PSNS).

[1] This compound was specifically listed in the Consent Decree. Because of the extreme toxicity (TCDD), EPA recommends that laboratories not acquire analytical standard for this compound.

Sec.

454.17 Pretreatment standards for existing sources (PSES).

Subpart B—Gum Rosin and Turpentine Subcategory

454.20 Applicability: description of the gum rosin and turpentine subcategory.
454.22 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.23 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.24 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.25 New source performance standards (NSPS).
454.26 Pretreatment standards for new sources (PSNS).
454.27 Pretreatment standards for existing sources (PSES).

Subpart C—Wood Rosin, Turpentine, and Pine Oil Subcategory

454.30 Applicability; decription of the wood rosin, turpentine, and pine oil subcategory.
454.32 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.33 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.34 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.35 New source performance standards (NSPS).
454.36 Pretreatment standards for new sources (PSNS).
454.37 Pretreatment standards for existing sources (PSES).

Subpart D—Tall Oil Rosin, Pitch, and Fatty Acids Subcategory

454.40 Applicability; description of the tall oil rosin, pitch, and fatty acids subcategory.
454.42 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.43 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.44 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.45 New source performance standards (NSPS).
454.46 Pretreatment standards for new sources (PSNS).

Sec.

454.47 Pretreatment standards for existing sources (PSES).

Subpart E—Essential Oils Subcategory

454.50 Applicability; description of the essential oils acids subcategory.
454.52 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.53 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.54 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.55 New source performance standards (NSPS).
454.56 Pretreatment standards for new sources (PSNS).
454.57 Pretreatment standards for existing sources (PSES).

Subpart F—Rosin-Based Derivatives Subcategory

454.60 Applicability; description of the rosin-based derivatives subcategory.
454.62 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
454.63 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.64 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.65 New source performance standards (NSPS).
454.66 Pretreatment standards for new sources (PSNS).
454.67 Pretreatment standards for existing sources (PSNS).

Subpart G—Sulfate Turpentine Subcategory

454–70 Applicability; description of the sulfate turpentine subcategory.
454.72 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
453.73 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
454.74 Effluent limitations representing the degree of effluent reduction attainable by the application of best conventional pollutant control technology (BCT).
454.75 New source performance standards (NSPS).
454.76 Pretreatment standards for new sources (PSNS).
454.77 Pretreatment standards for existing sources (PSES).

Authority: Sections 301, 304(b), (c), (e), and (g), 306 (b) and (c), 307 (b) and (c), and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977) (the "Act"); 33 U.S.C. 1311, 1314 (b), (c), (e), and (g), 1316 (b) and (c), 1317 (b) and (c), and 1361; 86 Stat. 816, Pub. L. 92–500; 91 Stat. 1567, Pub. L. 95–217.

General Provisions

454.01 Applicability

This part applies to char and charcoal briquet producers; gum rosin and turpentine producers; wood rosin, turpentine, and pine oil producers; tall oil rosin, pitch, and fatty acids producers; essential oils producers; rosin-based derivatives producers associated with other gum and wood chemicals subcategories; and sulfate turpentine producers which discharge or may discharge pollutants to waters of the United States or which introduce or may introduce pollutants into a publicly-owned treatment works.

454.02 General definitions.

In addition to the definitions set forth in 40 CFR Part 401, the following definitions apply to this part:

(a) Char and charcoal briquet production means the destructive distillation of softwood and hardwood to produce char which may be further processed into charcoal.

(b) Gum rosin and turpentine production means the distillation of the sap of live pines to separate turpentine and gum rosin. Production shall be the sum of the final products.

(c) Wood rosin, turpentine, and pine oil production means extraction from wood chips of rosin, turpentine, and pine oil and separation of the components by distillation. Production shall be the sum of the final products plus intermediates.

(d) Tall oil rosin, pitch, and fatty acids production means fractionation of crude tall oil to its constituent components. Production shall be the sum of the final products plus intermediates.

(e) Essential oils production means the steaming of oil containing raw material under pressure to produce a finished oil product. Production shall be the sum of the final product.

(f) Rosin-based derivatives production means chemical modification of the rosins. Production shall be the sum of the final products.

(g) Sulfate turpentine production means the fractionation of Kraft sulfate turpentine into its constituent components and any modifications by chemical reactions. Production shall be the sum of the final products plus intermediates.

(h) At-the-source means at a reaction kettle or other designated site where intermediates are modified by use of a metallic catalyst.

§ 454.03 Monitoring and Reporting. [Reserved]

Subpart A—Char and Charcoal Briquets Subcategory

§ 454.10 Applicability; description of the manufacture of char and charcoal briquets subcategory.

This subpart applies to discharges resulting from the production of char or charcoal briquets.

§ 454.12 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–125.32, there shall be no discharge of process wastewater pollutants to waters of the United States from any existing point source subject to this subpart.

§ 454.13 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT). [Reserved]

§ 454.14 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

§ 454.15 New source performance standards (NSPS). [Reserved]

§ 454.16 Pretreatment standards for new sources (PSNS). [Reserved]

§ 454.17 Pretreatment standards for existing sources (PSES). [Reserved]

Subpart B—Gum Rosin and Turpentine Subcategory

§ 454.20 Applicability; description of the manufacture of gum rosin and turpentine subcategory.

This subpart applies to discharges resulting from the production of gum rosin or turpentine.

§ 454.22 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart B

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	1.42	0.755
TSS	0.077	0.026
ph	Within the range of 6.0 to 9.0 at all times	

§ 454.23 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT). [Reserved]

§ 454.24 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

§ 454.25 New source performance standards (NSPS). [Reserved]

§ 454.26 Pretreatment standards for new sources (PSNS). [Reserved]

§ 454.27 Pretreatment standards for existing sources (PSES). [Reserved]

Subpart C—Wood Rosin, Turpentine, and Pine Oil Subcategory

§ 454.30 Applicability; description of the wood rosin, turpentine, and pine oil subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly-owned treatment works from any gum and wood chemicals plant which, either exclusively or in addition to other gun and wood chemicals operations, processes wood stumps or wood chips into rosin, turpentine, and pine oil products by solvent extraction and distillation.

§ 454.32 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart C

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	2.08	1.10
TSS	1.38	0.475
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.33 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT). [Reserved]

§ 454.34 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control techology (BCT):

Subpart C

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	2.08	1.10
TSS	1.38	0.475
pH	Within the range of 6.0 to 9.0 at all times.	

454.35 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following new source performance standards (NSPS):

Subpart C

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	2.08	1.10
TSS	1.38	0.475
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.36 Pretreatment standards for new sources (PSNS). [Reserved]

§ 454.37 Pretreatment standards for existing sources (PSES). [Reserved]

Subpart D—Tall Soil Rosin, Pitch, and Fatty Acids Subcategory

§ 454.40 Applicability; description of the tall oil, rosin, pitch, and fatty acids subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly-owned treatment works from any gum and wood chemicals plant which, either exclusively or in addition to other gum and wood chemicals operations, processes crude tall oil into rosin, pitch, and fatty acids by fractionation.

§ 454.42 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart D

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	0.995	0.529
TSS	0.705	0.243
pH	Within the range of 6.0 to 9.0 at all times.	

§ 454.43 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT). [Reserved]

§ 454.44 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT):

Subpart D

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	0.995	0.529
TSS	0.705	0.243
pH	Within the range of 6.0 to 9.0 at all times.	

§ 454.45 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following new source performance standards (NSPS):

Subpart D

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	0.995	0.529
TSS	0.705	0.243
pH	Within the range of 6.0 to 9.0 at all times.	

§ 454.46 Pretreatment standards for new sources (PSNS). [Reserved]

§ 454.47 Pretreatment standards for existing sources (PSES). [Reserved]

Subpart E—Essential Oils Subcategory

§ 454.50 Applicability; description of the essential oils subcategory.

This subpart applies to discharges resulting from the manufacture of essential oils.

§ 454.52 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart E

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	22.7	12.0
TSS	9.01	3.11
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.53 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT). [Reserved]

§ 454.54 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

§ 454.55 New source performance standards (NSPS). [Reserved]

§ 454.56 Pretreatment standards for new sources (PSNS). [Reserved]

§ 454.57 Pretreatment standards for existing sources (PSES). [Reserved]

Subpart F—Rosin-Based Derivatives Subcategory

§ 454.60 Applicability: description of the rosin-based derivatives subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly-owned treatment works from any gum and wood chemicals plant which, in addition to other gum and wood chemicals operations, chemically modifies rosins.

§ 454.62 Effluent limitations representing the degree of effluent limitations reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart F

Pollutant or pollutant property	BPT Effluent limitations: Maximum for any 1 day	BPT Effluent limitations: Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	1.41	0.748
TSS	0.045	0.015
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.63 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT):

Subpart F

Pollutant or pollutant property	BAT effluent limitations: Maximum for any 1 day	BAT effluent limitations: Average of daily values for 30 consecutive days
	milligrams per liter (mg/l)	
Zinc [1]	4.2	1.8

[1] At the source.

§ 454.64 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT):

Subpart F

Pollutant or pollutant property	BCT effluent limitations: Maximum for any 1 day	BCT effluent limitations: Average of daily values for 30 consecutive days
	Kg/kkg (or lb/1,000 lb) of product	
BOD5	1.41	0.748
TSS	0.045	0.015
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.65 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following new source performance standards (NSPS):

Subpart F

Pollutant or pollutant property	NSPS effluent limitation: Maximum for any 1 day	NSPS effluent limitation: Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	1.41	0.748
TSS	0.045	0.015
	milligrams per liter (mg/l)	
Zinc [1]	4.2	1.8
pH	Within the range of 6.0 to 9.0 at all times	

1 At the source.

§ 454.66 Pretreatment standards for new sources (PSNS).

Any new source subject to this subpart which introduces pollutants into a publicly-owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources (PSNS):

Subpart F

Pollutant or pollutant property	PSNS effluent limitations: Maximum for any 1 day	PSNS effluent limitations: Average of daily values for 30 consecutive days
	milligrams per liter (mg/l)	
Zinc [1]	4.2	1.8

[1] At the source.

§ 454.67 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR 403.13, any existing source subject to this subpart which introduces pollutants into a publicly-owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources (PSES):

Subpart F

Pollutant or pollutant property	PSES effluent limitations: Maximum for any 1 day	PSES effluent limitations: Average of daily values for 30 consecutive days
	milligrams per liter (mg/l)	
Zinc [1]	4.2	1.8

[1] At the source.

Subpart G—Sulfate Turpentine Subcategory

§ 454.70 Applicability: description of the sulfate turpentine subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly-owned treatment works from any sulfate turpentine plant which, either exclusively or in addition to other gum and wood chemicals operations, processes sulfate turpentine into pinenes, dipentine, and sulfate turpentine.

§ 454.72 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available. (BPT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Subpart G

Pollutant or pollutant property	BPT effluent limitations: Maximum for any 1 day	BPT effluent limitations: Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	5.504	2.924
TSS	0.686	0.236
pH	Within the range of 6.0 to 9.0 at all times	

§ 454.73 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT):

Subpart G

Pollutant or pollutant property	BAT effluent limitations: Maximum for any 1 day	BAT effluent limitations: Average of daily values for 30 consecutive days
	milligrams per liter (mg/l)	
Copper [1]	4.5	1.8
Nickel [1]	4.1	1.8

[1] At the source.

§ 454.74 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in 40 CFR 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best

conventional pollutant control tchnology (BCT):

Subpart G

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	5.504	2.924
TSS	0.686	0.236
PH	Within the range of 6.0 to 9.0 at all times	

§ 454.75 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following new source performance standards (NSPS):

Subpart G

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	kg/kkg (or lb/1,000 lb) of product	
BOD5	5.504	2.924
TSS	0.686	0.236
	milligrams per liter (mg/l)	
Cooper [1]	4.5	1.8
Nickel [1]	4.1	1.8
pH	Within the range of 6.0 to 9.0 at all times	

[1] At the source.

§ 454.76 Pretreatment standards for new sources (PSNS).

Any new source subject to this subpart which introduces pollutants into a publicly-owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources (PSNS):

Subpart G

Pollutant or Pollutant property	PSMS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter (mg/l)	
Copper [1]	4.5	1.8
Nickel [1]	4.1	1.8

[1] At the source.

§ 454.77 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR 403.13, any existing source subject to this subpart which introduces pollutants into a publicly-owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources (PSES):

Subpart G

Pollutant or Pollutant property	PSMS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter (mg/l)	
Copper [1]	4.5	1.8
Nickel [1]	4.1	1.8

[1] At the source.

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